

## **“USDA NRCS Technology News” ~ April 2002**

United States Department of Agriculture  
Natural Resources Conservation Service  
Science and Technology

**“USDA NRCS *Technology News*”** is a monthly electronic information piece provided by Science and Technology. It is designed to deliver pertinent information to our customers about new technology, products, and services available from the Soil Survey and Resource Assessment and the Science and Technology deputy areas. **“USDA NRCS *Technology News*”** is in a format that is available to all NRCS field staff.

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#### **MESSAGE FROM THE DEPUTY CHIEFS**

Lawrence E. Clark and Maurice J. Mausbach

The Natural Resources Conservation Service (NRCS) has experienced constant change throughout its history. New technology has evolved and conservation systems have improved. Expectations have increased for field staff’s technical skills in accordance with changing technology.

The pioneers of erosion control did not have a list of tested conservation practices. Early erosion control techniques were developed from field trial-and-error and research. Modifications were often made on the spot. Research was quickly field-tested. Design and planning tools—even the most basic tools to estimate water runoff and erosion rates—were yet to be developed. Hugh Hammond Bennett set the erosion control direction of using land within its capability and piecing together different practices into a conservation system that meets the farm/ranch needs. This formed the foundation for the conservation plan that is often unique to the individual farm or ranch. These premises hold firm, even in today's concept of conservation planning. Today it might be difficult for technical staff to comprehend the complexity of simple conservation planning and application in the early days of the Agency. However, these experiences have laid the groundwork for the conservation practices used today. And, even these practices continue to evolve, with new ones being tested.

Agriculture has changed dramatically since the NRCS – then known as the Soil Erosion Service - was born. Gone are the use of mules and horses for power and the slash-and-burn agriculture. A new agriculture has evolved with the sophisticated use of technology, bringing new responsibilities for conservation and new expectations for field staff. Modern agriculture uses computers to communicate with satellites to measure distance, to measure the harvest, and to vary chemical and seed applications. Large fields are necessary for efficient operation of this sophisticated equipment. The conservation professional staff has adapted conservation systems to accommodate the new agriculture.

The public demands for environmental improvement have also changed. Starting in the era of the 1970's, Agency policies were adjusted to meet the new environmentally based challenges. The phrase “interdisciplinary planning and application” was promoted in all Agency policies. Again, the field staff had to adapt and learn new conservation concepts and practices.

Today, new technology is bringing another change for the field staff. Computer technology allows field staff to display digital aerial photographs on a computer screen and use GIS software to delineate important features and make routine calculations. A high quality, professional map is produced. The details of the conservation plan are attached and keyed to the map. Computer information can be downloaded into a GPS system and carried to the field for making accurate measurements at one-third the time. Or, GPS measurements can be uploaded into the computer and read into the GIS system for calculations and updating the plan. Accuracy of work, timesaving, and professional quality are benefits the field staff can readily observe. Field staff may soon forget the time-consuming process of inking and making detailed calculations.

Field staff technical skills have evolved to meet the technological demands of fieldwork and will continue to grow as technology further impacts conservation practices. Change and the evolution of technical skills are inevitable and exciting.

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## **CONSERVATIONIST'S CORNER**

**Elesa Cottrell, State Conservationist, Delaware**

Inland Bays Estuary is an important part of Delaware's \$250 million per year water-based recreation industry. Each summer the Inland Bays area, located in the southeast portion of the state, grows from a year-round population of approximately 36,000 to over 150,000. The Inland Bays are actually three separate bays: Rehoboth Bay, Indian River Bay, and Little Assawoman Bay. Residents and non-residents alike enjoy recreational activities, such as boating, fishing, crabbing, and birdwatching. Recreation surveys have estimated that there are over 100,000 user-days per year in the Inland Bays.

But, water quality problems threaten to curtail these activities. The Inland Bays have been found to have high levels of nitrogen and phosphorus. Elevated levels of these nutrients have negatively impacted ground and surface water quality. Scientific research has shown that the main activities contributing to these elevated levels of nutrients are urbanization and agriculture. Concentrated development in the Inland Bays watershed and an enormous broiler-chicken production industry that produces approximately 190 million birds each year contribute large amounts of nutrients into the Inland Bays water system.

In the last 15 years, the NRCS, Farm Service Agency, Environmental Protection Agency, and State and local agencies have used a variety of technical and financial assistance conservation programs to address the nonpoint-source pollution problems in the Inland Bays. This includes the PL-566 Small Watershed Program, the Environmental Quality Incentives Program (EQIP), the 319 Program, and several other national initiatives. State and local agencies have poured financial and technical assistance into the watershed through cost share programs and increased staff. Still, the problems persist. Several attempts have been made to develop a management tool to help decisionmakers make sound natural resources decisions.

NRCS Delaware, working with the NRCS Watershed Science Institute (WSSI), undertook an effort to customize an existing watershed ecosystem nutrient dynamics model (the WEND-1 model) developed for Vermont's Lake Champlain at the University of Vermont (U of V). The outputs from this dynamic simulation model of phosphorus allow resources managers to explore the impacts of alternative agriculture and urban treatment and to assess the response time of these changes.

Working closely with University of Delaware scientists, conservation district officials, NRCS county field office staff, and knowledgeable state and local leaders, U of V was able to calibrate the model for the Inland Bays and create the Inland Bays model (WEND-IBW). Numerous management and land use scenarios were run, and outputs were found to be well in line with existing research and statistical data for the watershed. The WEND-IBW model was well received by scientists and environmental agencies in Delaware. A subsequent training session was held for Agency staff to train them in calibrating and using the WEND-IBW model.

The WSSI has provided Delaware natural resources managers with a model that can be used not only to evaluate management scenarios in the Inland Bays watershed, but that can be calibrated and used on other watersheds in the state.

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## **NEW PRODUCTS AND SERVICES**

### **“Adding Up Social Capital: An Investment in Communities” Available**

“Adding Up Social Capital: An Investment in Communities” is a new technical note available from the Social Sciences Institute and from the Institute’s Web site at [www.ssi.nrcs.usda.gov/ssi/](http://www.ssi.nrcs.usda.gov/ssi/). The publication defines social capital as bonds of trust that arise between people in every day community situations. A one-page procedure is provided for readers to measure the level of social capital in their community. The results can be used to raise awareness of whether social capital may be an obstacle to conservation. “Adding Up Social Capital: An Investment in Communities” also provides an example of a community that implements a successful locally led conservation plan. References for measuring and improving social capital are also included.

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## **TECHNOLOGY TRANSFER**

### **February 2002 is Best Month Yet for PLANTS Web Site**

February statistics show that the PLANTS Web site received 3.6 million hits for the month. This activity is a 25 percent increase over January 2002 and is PLANTS highest month on record. In addition to the steady increase in hits, PLANTS has received positive feedback from users, such as e-mail from a nature center staff who said “Thank you for a great Web site.” She was pleased to report that she and her colleagues received not only a needed answer, but “lots more information” as well.

For more information, contact:

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## **WEB-BASED TECHNOLOGY**

### **Geospatial Data Gateway is One-Stop Source for Natural Resources Data**

The Geospatial Data Gateway is a digital data ordering and delivery system. It provides a single access point for geospatial resource data and delivers the data on demand through the Internet. Important goals of the Gateway are to provide efficient and timely program delivery, better use and management of data resources, and improved products and services for the customer. The data sets served by the Gateway are outlined in the USDA Service Center Geographic Information System (GIS) Strategy.

Primary geospatial themes available or planned for the Gateway and warehouse implementation include: soils, orthophoto mosaics and digital orthophoto quadrangles, digital raster graphs, demographics, governmental units, elevation, hydrography, cadastral, transportation, land cover/use, flood hazards, wetlands, and watershed boundaries. Important data sets already available include over 1,300 county orthophoto mosaics, almost 400 county digital raster graph (DRG) mosaics, and DRG quadrangles for the Continental United States. Soil Survey Geographic Database (SSURGO) is available and SSURGO II data, which include the National Soil Information System (NASIS) download, are being added as the information becomes available from the Digitizing Centers.

Users can easily locate data for selected geographic areas and receive data via File Transfer Protocol (FTP) or Compact Disc (CD) formats compatible with commercial and Service Center applications. The public also has access to the Gateway. A Java-enabled browser must be used to navigate through the geospatial data. Recommended browsers are Netscape 4.7 (or higher) and Internet Explorer 5.5 (or higher). The URL is <http://lighthouse.nrcs.usda.gov/gateway/gatewayhome.html>.

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### **International Communication Network Established to Combat Invasive Species**

The National Plant Data Center (NPDC) is now working with Mexican, Canadian, and U.S. agencies to develop the North American node of the Global Invasive Species Programme (GISP), <http://www.issg.org>. The standards for the development of this GISP node will be used in May at a meeting in Estonia to serve as the basis for establishing a Nordic-Baltic node. Last year, NPDC participated in the original scoping of the GISP network and the establishment of a node in southern Africa.

GISP is an international collaboration under the auspices of the United Nations Environmental Programme and the International Union for the Conservation of Nature and Natural Resources. It is a network designed to provide channels of communication to alert member countries about new invasive species and technologies to manage and combat them. The United States Geological Survey is the lead agency for the U.S.

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## **TRAINING**

### **Conservation Buffers Course Under Development for June Pilot**

"Buffer practices have been widely and successfully applied under previous farm bills and will likely continue or even accelerate under the new farm bill," says Max Schnepf, coordinator, USDA National Conservation Buffer Initiative. A 2-day National Employee Development Center (NEDC) training course, "Conservation Buffers," will focus heavily on buffer design and practical class and field exercises for getting buffers on the ground in local areas. Sections on program requirements and local marketing are also included.

Institutes and centers are nearing completion of training materials for the NEDC course, with a pilot course tentatively scheduled for Nebraska City, Nebraska, in June 2002. The need for additional sessions and locations in FY 2002 are being investigated.

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### ***The Leader in You Seminar Builds Skills to Manage Difficult People***

On May 14, 2002 from 1:00 to 3:00 p.m. e.t., Sandra Crowe will present “Since Strangling STILL Isn’t an Option: Managing Difficult People,” for the second installment of “The Leader in You” spring series. The popular 1998 program, “Since Strangling Isn’t an Option: Managing Difficult People,” has been updated to reflect a changing world. Crowe will not only discuss how to “strangle” our difficulties with difficult people, but also how to unwind the tension that is associated with these situations. Participants at all levels of the conservation partnership will learn “empowerment skills” to achieve positive interpersonal relationships with both customers and colleagues. And, attendees will learn to relate to people with more ease, power, strength, and confidence. Satellite broadcast information and handouts will be available by early May.

For more information, contact:

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